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S&MA Mission Services
Task Directive

Control No.	ORG No.:	PROJECT SYMBOL:	Contract No.
0014	QS10	SLI- PRA	NAS8-00179

Originator's Signature: for Tom Hartline Alan Z. Clark	Date: 5/3/02	Originator's Priority: High
Office Manager's Signature: Tom Hartline	Date: 5/3/02	
COTR's Approval: Terry Hamm Terry J. Ho	Date: 5/3/02	

Subject: Probabilistic Risk Assessment for SLI Program

Task Description:

Provide the foundation for a Probabilistic Risk Assessment (PRA). The program will implement continuous risk management starting with the variety of architecture options now being investigated by the various team members. The techniques or PRA will be used to develop risk models that are "risk simulators" so that architecture and eventually design options can be compared. A consistent set of such risk models, providing fair comparisons, is important when performing risk management activities geared toward downselect decisions. The risk models will evolve in concert with development of the SLI design options. These models are also useful when evaluating architecture and design variations within a single SLI architecture. PRA will support management decisions throughout the life of the program. The tool is also intended to support the various system engineering functions as the program moves from System Requirements Review forward. This statement of work describes the activities need to lay the foundation for the development of the PRA. This PRA will be built in close coordination with NASA, its contractors and team members.

Before the PRA development begins in earnest a plan will be developed. This plan will include, but not be limited to, the following items:

- Define scope of the assessment (end states, mission phases, operational profiles)
- Identify the input requirements
- Define specific data requirements and other related contributions from each NASA center, team member and contractor
- Identify modeling tool
- Develop consistent naming nomenclature
- Set schedules and time table for fro activity completion
- Define methods and techniques to handle data reduction
- Define consistent set of ground rules, approximations and assumptions so that comparison are fair
- Define consistent formats for results

As part of the plan, a top level PRA template will be created. It will be defined so that the variety of missions and architectures presented at STT can be evaluated with some confidence against the program goals of 1 in 10,000loss of crew an 1 in 100 loss of mission . It will define a list of initiating events and end states that are consistent overall designs. This will be the starting point for the PRA activity lasting from SRR to PDR and be the foundation for the PRA throughout the life of the program

The top level PRA will consist of Master Logic Diagrams (MLDs), Event Sequence Diagrams (ESDs), and their equivalent Event Trees. The top events for the Master Logic Diagrams are the top level consequences or outcomes of interest to program decision makers. These MLDs will define the set of initiating events and ESDs for which all SLI options will be evaluated in a consistent way. These top level ESDs are typically limited in detail to the key systems and subsystems (e.g. propulsion, GNC, electric power, provision for landing, provision for turnaround and reuse). As part of this activity, the STS PRA will be reconfigured to coincide with the format and level of detail fo the SLI set of models so that it can be used as the reference PRA case.

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Control No. 0014 PROJECT SYMBOL: SLI PRA Contract No. NAS8-00179

Deliverables:

1. SLI Program Plan
2. Top Level PRA Analysis
3. Delivery dates to coincide with SLI Program milestones, to be completed by September 30, 2002

Schedules/Duration:
This task will end September 30, 2002

Resource Estimate:

Report Progress To: Tom Hartline		Frequency of Report: weekly